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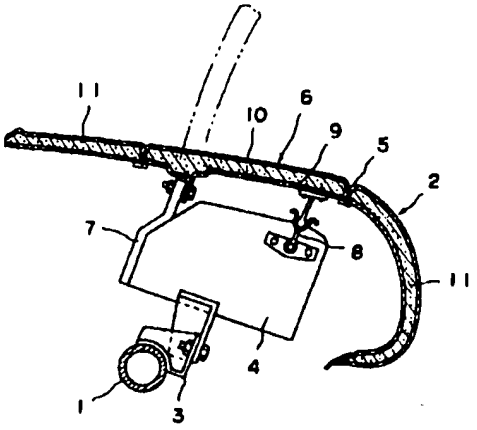
【図1】



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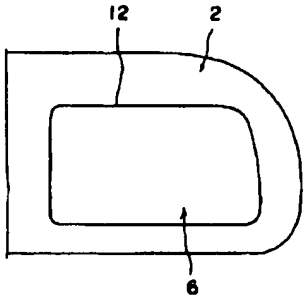

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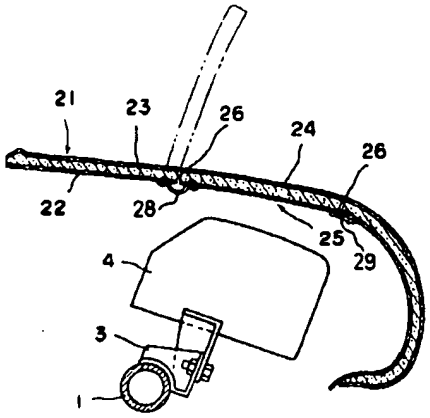

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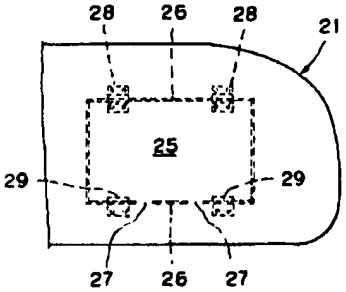

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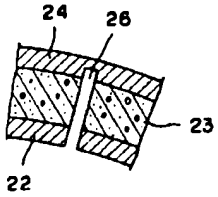

Translation of Japanese Publication No. 5-185894

[Title of the Invention] Instrument Panel

[Claims]

[Claim 1] An instrument panel (21) having an instrument panel core material (22), an outer surface material (24) and a foam layer (23) sandwiched between the core material and outer surface material, characterized in that a circling groove (26) for breaking a part of the instrument panel upon expansion of an air bag is formed in the instrument panel by making a slit which extends through the instrument panel core material and foam layer and reaches a back face of the outer surface material, the groove (26) defining a lid area (25) which corresponds to an installation area of an air bag unit, and metallic hinges (28) and stopper plates (29) are provided over the groove (26) to prevent falling off and deformation of the air bag lid area (25).

[Detailed Description of the Invention]

[0001]

[Technical Field]

The present invention relates to instrument panels for vehicles having air bag units and more particularly to such instrument panels having an air bag unit in front of an assistant driver's seat.

[0002]

[Prior Art]

A construction of a conventional instrument panel is illustrated in Figure 1. Specifically, a reference numeral 1 designates a steering member extending behind an instrument panel 2, and a bracket 3 is secured to the steering member 1 by welding. An air bag unit 4 is supported by the bracket 3 such that it

positions behind the instrument panel 2.

[0003]

A support arm 7 for supporting an air bag lid 6 which closes an air bag deployment opening 5 formed in the instrument panel 2, and a stop 8 for maintaining a closed condition of the air bag lid 6 are mounted on an outer surface of the air bag unit 4. If a vehicle collides and an abnormally large force applies to the vehicle, a detonating agent in the air bag unit 4 explodes thereby causing the air bag to expand. The inflated air bag pushes the air bag lid 6 upward as indicated by the chain line and deploys or expands toward an assistant driver to save the assistant driver.

[0004]

[Problems to be solved by the invention]

The instrument panel having the above structure has the air bag lid 6 to close the air bag deployment opening. The air bag lid 6 is formed by a metallic core member 9 and air bag lid pad 10 attached to an upper surface of the lid core member 9. The pad 10 is made from a material other than that used to make an instrument panel pad 11 attached to the outer surface of the instrument panel 2 so that a parting line 12 (Fig. 2) appears between the air bag lid pad 10 and instrument panel pad 11 thereby deteriorating an overall appearance of the instrument panel. Further, there are some unavoidable variations or manufacturing tolerances in size and accuracy of the air bag lid 6 so that a gap between the air bag lid 6 and deployment opening 5 may not be uniform and/or the air bag lid 6 may not be coplanar to the instrument panel 2. These degrade an appearance of the instrument

panel. In addition, since the air bag lid 6 is separately manufactured, the number of the parts is large, and cost effectiveness and productivity are affected.

[0005]

[Means to solve the problems]

The present invention was developed in consideration of the above problems of the conventional instrument panel arrangement, and its object is to provide an instrument panel having a core material, an outer surface material and a foam layer sandwiched between the core material and outer surface material, characterized in that a circling groove for breaking a part of the instrument panel upon expansion or deployment of an air bag is formed in the instrument panel by making a slit which extends through the core material and foam layer and reaches a back face of the outer surface material, the groove defining a lid area that corresponds to an installation area of an air bag unit, and hinges and plates are provided over the groove to connect the air bag lid area with an adjacent core material thereby preventing falling off and deformation of the air bag lid area. Consequently, presence of the air bag lid becomes invisible thereby improving the appearance and the number of the parts is reduced thereby simplifying an assembling process and improving cost efficiency. In addition, the air bag lid area is formed after the instrument panel is prepared, i.e., the air bag lid area is easily manufactured, whereby productivity and cost efficiency of the instrument panel having the air bag lid portion are raised.

[0006]

[Embodiments]

Now, the present invention will be described in detail based on its embodiment illustrated in Figures 3 to 5, but the structures of the air bag unit and parts for supporting the air bag unit are the same as those of the conventional instrument panel arrangement so that their description will be omitted by assigning the same reference numerals.

[0007]

A reference numeral 21 designates an instrument panel of this embodiment which includes a resin core material 22, a foam layer 23 formed on the core material 22 and an outer surface material 24 attached to the foam layer 23. The instrument panel 21 is manufactured by a conventional molding method.

[0008]

In this embodiment, the instrument panel 21 undergoes a secondary process to form an air bag lid portion 25 at a position corresponding to an installation position of the air bag unit 4. The secondary process creates the air bag lid 25 by forming a slit 26 from the back face of the instrument panel 21 such that the slit penetrates the instrument panel core material 22 and foam layer 23 and reaches a back surface of the outer surface material 24. The slit 26 defines a substantially rectangular area as illustrated in Figure 4. The slit or groove 26 does not extend through the outer surface material 24. Non-groove portions 27 are intermittently left. Further, since the outer surface material 24 is continuous to the instrument panel 21, the air bag lid portion 25 is concealed if viewed from the outside.

[0009]

After the air bag lid portion 25 is formed, metallic hinges

28 and stopper plates 29 are mounted over the groove 26 to reinforce connection between the air bag lid 25 and instrument panel 21. Consequently, even if a considerable pressing force were applied to the air bag lid area 25 from the outer surface of the instrument panel 21, the air bag lid 25 would not deform nor break.

[0010]

In the above described instrument panel arrangement 21, since the air bag lid portion 25 is defined by the circling groove 26 formed at the position corresponding to the installation position of the air bag unit 4, the air bag lid portion 25 pivots about the hinges 28, breaks the outer surface material 24 and connections 27 and deploys as indicated by the chain line of Figure 3 upon a detonating operation of the air bag unit 4 and subsequent expansion of the air bag. A only resistance acting on the deploying air bag is a stress generated upon breaking of the outer surface material 24 and connections 27. This does not adversely influence expansion of the air bag.

[0011]

When the air bag lid 25 is opened upon expansion of the air bag, plastic deformation of the metallic hinges 28 appropriately absorbs a kinetic energy of the lid 25. Accordingly, an excessively large impact force would not be generated so that for example the lid 25 would not break a front window shield of the vehicle.

[0012]

The instrument panel 21 of the invention can be manufactured using an instrument panel prepared by a conventional method.

Specifically, such a conventional instrument panel is further processed according to the above described secondary process: forming the groove 26 in the instrument panel and mounting the hinges and reinforcement parts to the instrument panel. Therefore, as compared with a conventional arrangement which has a separately prepared air bag lid mounted thereon later in an openable/closable manner, the arrangement of the invention requires a less number of parts and can be manufactured by greatly simpler molding and assembling processes. This contributes to improvement in cost and productivity.

[0013]

Since the instrument panel of the invention does not have a parting line on its outer surface, presence of the air bag deployment opening is concealed. Accordingly, an appearance of the instrument panel is not affected and harmony with other parts is maintained.

[0014]

[Advantages of the invention]

As understood from the foregoing, the present invention provides an instrument panel 21 having a core material 22, an outer surface material 24 and a foam layer 23 sandwiched between the core material and outer surface material, characterized in that a circling groove 26 for breaking a part of the instrument panel upon expansion of an air bag is formed in the instrument panel by making a slit which extends through the instrument panel core material and foam layer and reaches a back face of the outer surface material, the groove 26 defining a lid area 25 which corresponds to an installation area of an air bag unit, and

metallic hinges 28 and stopper plates 29 are provided over the groove 26 to prevent falling off and deformation of the air bag lid area 25. This instrument panel can be manufactured from an instrument panel prepared by a conventional molding process if the conventional instrumental panel undergoes the secondary processing. The secondary process includes forming the slit 26 in the instrument panel and attaching the hinges and reinforcement parts to the instrument panel. Therefore, as compared with a conventional arrangement having a separate openable/closable air bag lid part, the arrangement of the invention requires a less number of parts and greatly simplified molding and assembling processes. Thus, the present invention improves cost and productivity.

[0015]

Since the instrument panel of the invention does not have a parting line on its outer surface, presence of the air bag deployment opening is not understood at a glance. Consequently, the instrument panel having a good harmony with adjacent parts is provided.

[Brief Description of the Drawings]

[Fig. 1] A view illustrating a structure of a conventional arrangement.

[Fig. 2] A plan view of the arrangement shown in Fig. 1.

[Fig. 3] A view illustrating a structure of an arrangement of the invention.

[Fig. 4] A plan view of the arrangement shown in Fig. 3.

[Fig. 5] An enlarged view of a major part shown in Fig. 3.

[Description of the reference numerals]

21: Instrument Panel

22: Core Material

23: Foam Layer

24: Outer Surface Material

25: Air Bag Lid

26: Slit or Groove

27: Connections

28: Metallic Hinges

29: Stop Plates

* * * * * * * * * * *